TSSG/APSD/ISAB-015/70
29 January 1970

MEMORANDUM FOR: Chief, Applied Photo Science Division, TSSG/NPIC

ATTENTION : Chief, Image Evaluation Branch, APSD/TSSG/NPIC

25X1A THROUGH : Chief, Image & System Analysis Branch, APSD/TSSG/NPIC

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SUBJECT : Status of Micro-D Interim Software System

1. The following programs which were last run on 3-4 December 1969 are currently considered operational without reservations.

Translator Program: Reformats tape produced by micro-densitometer. "Translates" the words into 494 Univac FORTRAN readable words.

Exposure Table Generator Program: Provides a table of values to be used in converting density to log exposure. Input is scan of step wedge characteristic of the mission. Output is a 300 place table of exposure values used in table look-up method by other programs.

Granularity Program: Makes a statistical study of representative area of film (evenly exposed) to determine the granularity of that film. Granularity is generally accepted as the standard deviation in density. Input are the scans made of an area of film translated and stored on magnetic tape. Output is a printed summary of the statistical analysis performed.

2. The following program was considered operational in March 1969. However the operator's manual is currently under revision by AID to resolve and clarify operating ambiguities.

Sensitometric Program: Processes data from step wedges to determine sensitometric characteristics of the film. Required inputs on punched cards are densitometer calibration data and density measurements from the step wedge to be analyzed.

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The values calculated for each wedge are BSPEED, CSPEED, RSPEED, GAMMA, BAR G (average gradient), SCALE (log E range between half-gamma points in the toe and shoulder of the D log E curve).

3. The following program has not yet been delivered to ISAB in operational form but is anticipated by the middle of March 1970.

Simple Fourier Transform Program: Computes modulation transfer function (or percent response) of a system in the spatial frequency plane (cycles/mm) by applying Fourier transform analysis to edge derivatives. Inputs are the scans of the edges to be analyzed, the D log E table, and film MTF values. Outputs are reported to be fidelity defect, modulation or percent response (transform modulus), the real and imaginary parts of the Fourier transform, the phase angle in degrees, and area under the normalized MTF. All of the above are computed for each edge.

4. The following program is currently undergoing testing and revision by AID.

Complex Fourier Transform Program: Similar to Simple Fourier Transform program except that it attempts to separate actual signal from an estimate of the noise. After a noise estimate has been computed statistically, it creates a Turin filter for each edge which is used on each trace to filter out the noise. Input is same as Simple Fourier Transform program. Primary outputs are noise power spectral density, MTF without filter, and MTF with filter for each edge.

5. Requests for Micro-D support and operational runs of the programs within the Micro-D Interim Software System should be in the form of a speed letter to the Chief, DAS/ISAB, through Chief, ISAB. The request should indicate the exact nature of support required, project number and the name of the person with whom the effort may be coordinated. Operating

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parameters for data collection and output requirements are dependent upon the particular support requested and will be coordinated with the requester through the Chief, DAS/ISAB. Generally a request involving computer output will require an absolute minimum of two hours for completion with the exact length of time required dependent upon the nature of the request and computer operating time.

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ISAB/APSD/TSSG/NPIC

Distribution:
Orig - NPIC/TSSG/APSD
1 - NPIC/TSSG/APSD/ISAB Chrono
1 - NPIC/TSSG/APSD/ISAB 920035
1 - NPIC/TSSG/APSD/IEB 61010S

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